Refine Search

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Terms	Documents
L4 and (automatic$6 or automat$3) same (output$6 or exit$3 or withdraw$6) same (bill$3 or cash$3 or pay$6 or payment) same (medical$3 or hospital$ or healthcare) same (record$3 or report$3)	12

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Search: L5

Refine Search

Recall Text | Clear | Interrupt

Search History

DATE: Friday, April 01, 2005 Printable Copy Create Case

Set Name side by side	Query	Hit Count	Set Name result set
	DB=USPT; PLUR=YES; OP=ADJ		
L5	L4 and (automatic$6 or automat$3) same (output$6 or exit$3 or withdraw$6) same (bill$3 or cash$3 or pay$6 or payment) same (medical$3 or hospital$ or healthcare) same (record$3 or report$3)	12	L5
L4	(unstructur$3 or formless or shapeless or amorphous or free or fluid or flow$3 or vague or undefin$5 or miss$6 or incorrect$6 or inconsist$4 or format$6 or unformat$6) same (data or cod$3)	340479	L4
L3	L1 and (unstructur$3 or formless or shapeless or amorphous or free or fluid or flow$3 or vague or undefin$5 or miss$6 or incorrect$6 or inconsist$4 or format$6 or unformat$6) same (data or cod$3)	1	L3
L2	L1 and (unstructur$3 or formeless or shapeless or amorphous or free or fluid or flow$3 or vague undifin$3 or miss$3 or incorrect$6 or inconsist$4 or format$6 or unformat$6) same (data or cod$3)	1	L2

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L1	(6347329).pn.	1	L1

END OF SEARCH HISTORY

h e b b cg b e e ch

L5: Entry 6 of 12 File: USPT Jan 30, 2001

DOCUMENT-IDENTIFIER: US 6182029 B1
TITLE: System and method for language extraction and encoding utilizing the parsing of text data in accordance with domain parameters

Brief Summary Text (8):
Although textual patient documents often provide valuable clinical data, most conventional systems provide textual information that cannot be reliably accessed by automated applications. To enable access to the information, however, medical language processing (MLP) systems have been developed that extract and structure information in patient reports in order to organize and encode the pertinent information appropriately for subsequent clinical applications. See, e.g., N. Sager, M. Lyman, C. Buchnall, N. Nhan and L. Tick, "Natural Language Processing and the Representation of Clinical Data," JAMIA, vol. 1 (2), pp. 142-160 (1994); C. Friedman, P. O. Alderson, J. Austin, J. J. Cimino and S. B. Johnson, "A General Natural Language Text Processor for Clinical Radiology," JAMIA, vol. 1 (2), pp. 161-174 (1994); G. Hripcsak, C. Friedman, P. Alderson, W. DuMouchel, S. Johnson, P. Clayton, "Unlocking Clinical Data From Narrative Reports," Ann. of Int. Med., vol. 122 (9), pp. 681-688 (1995); P. Haug, D. Ranum, P. Frederick, "Computerized Extraction of Coded Findings from Free-Text Radiologic Report," Radiology, vol. 174, pp. 543-548 (1990); P. Zweigenbaum, B. Bachimont, J. Bouaud, J. Charlet and J. A. Boisvieux, "A Multi-lingual Architecture for Building a Normalized Conceptual Representation from Medical Language," Proceedings of the 19th Annual SCAMC; pp. 357-361 (1995); R. Baud, A. Rassinoux, J. Scherrer, "Natural Language Processing and Semantical Representation of Medical Texts," Meth. of Info. Med., vol. 31 (2), pp. 117-125 (1993); and L. Lenert and M. Tovar, "Automated Linkage of Free-Text Descriptions of Patients with a Practice Guideline," Proceedings of the 17th Annual SCAMC, pp. 274-278 (Ozbolt ed. 1993).

Brief Summary Text (10):
Despite the advancement of medical and natural language processing systems, conventional systems remain limited to specific areas of expertise (i.e., domains) and can only be used on a limited number of dedicated computing platforms. Examples of such conventional systems include those used for decision support and quality assurance tasks. See, e.g., N. Sager, M. Lyman, C. Buchnall, N. Nhan and L. Tick, "Natural Language Processing and the Representation of Clinical Data," JAMIA, vol. 1 (2), pp. 142-160 (1994); G. Hripcsak, C. Friedman, P. Alderson, W. DuMouchel, S. Johnson, P. Clayton, "Unlocking Clinical Data From Narrative Reports," Ann. of Int. Med., vol. 122 (9), pp. 681-688 (1995); P. Haug, D. Ranum, P. Frederick, "Computerized Extraction of Coded Findings from Free-Text Radiologic Report," Radiology, vol. 174, pp. 543-548 (1990); and L. Lenert and M. Tovar, "Automated Linkage of Free-text Descriptions of Patients with a Practice Guideline," Proceedings of the 17th Annual SCAMC, pp. 274-278 (Ozbolt ed. 1993). Other systems automatically generate ICD codes from text to assist in generating billing codes. See, e.g., M. Gundersen, P. Haug, T. Pryor, R. van Bree, S. Koehler, K. Bauer, B. Clemons, "Development and Evaluation of a Computerized Admission Diagnoses Encoding System," Computers and Biomedical Research, vol. 29, pp. 351-372 (1996); and C. Lovis, J. Gaspoz, R. Baud, P. Michel and J. Scherrer, "Natural Language Processing and Clinical Support to Improve the Quality of Reimbursement Claim Databases," Proceedings of the 1996 AMIA Fall Annual Symposium, p. 899 (Henley & Belfus 1996). Although output generated by these systems are structured so that it may be used by

different automated applications, conventional systems remain unable to map the structured output directly to corresponding text in the original report. Other systems use comprehensive syntactic and semantic knowledge, and include knowledge about the structure of complete sentences.

Brief Summary Text (25):
In processing, one or several parameters are referred to. The parameters are associated with options. To choose an option, the appropriate value is assigned to the parameter. A parameter can have a value by default. Of particular importance is the inclusion of a parameter which is associated with the medical/clinical domain or sub-field of the input data. Other parameters may be associated with the level of parsing accuracy desired, whether code selection is desired, the type of filtering, or the format of the output.

Detailed Description Text (25):
The last component, tagger 16 of FIG. 3, is used to "tag" the original text data with a structured data component. In a system using an XML format, for example, the system of the present invention will generate the following output for the phrase "spleen is moderately enlarged" discussed above:

Detailed Description Text (43):
The outputh17 routine is used to convert the MedLEE output to an appropriate form for storage in database (xformtodb) and to write the MedLEE output in an HL7 in coded format. This process uses synonym knowledge and an encoding knowledge base.

Detailed Description Text (47):
FIG. 3 shows a block diagram of a second embodiment of the information extraction (MedLEE) program of FIG. 1. The modified program 300 includes a tagger routine 16 for linking the structured output described previously with respect to FIG. 1 to the corresponding words in the original sentences of the text data input. Preferably, the tagger 16 utilizes markup languages, such as Hypertext Markup Language (HTML) and Extensible Markup Language (XML), which are derived from Standard Generalized Markup Language (SGML) and which are used rendering documents for the World Wide Web. Widespread adoption of markup languages are evidenced by: the Text Encoding Initiative (TEI) which uses SGML to encode literature; Chemical Markup Language (CML), which involves documentation of chemical compounds using SGML; and Open Financial Exchange (OFE), which is an SGML standard format for interchange of financial transactions.

Detailed Description Text (58):
The tagged textual element tt is also specified in FIG. 5. It provides a document-centric view of the report because it consists of the original report enriched with tags that delineate and identify textual elements sent (marking sentences) and #PCDATA which is the original textual data. The component sent consists of textual data, phrases phr, or undefined words undef. The component phr has an attribute id whose value is a unique identifier within the report. The idref attributes of the elements of the structured components correspond to the id attributes of the phrases. Similarly the idref attributes of the sid elements of the structured components correspond to the id attributes of the sentences (sent).

Other Reference Publication (3):
P. Haug, D. Ranum, P. Frederick, "Computerized Extraction of Coded Findings from Free-Text Radiologic Report," Radiology, vol. 174, pp. 543-548 (1990).

CLAIMS:

16. The method according to claim 1, wherein said tagging step comprises providing the structured data component in a Standard Generalized Markup Language (SGML) compatible format.

34. The system according to claim 19, wherein said tagging means comprises means for providing the structured data component in a Standard Generalized Markup Language (SGML) compatible format.

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L5: Entry 8 of 12 File: USPT Aug 3, 1999

DOCUMENT-IDENTIFIER: US 5933809 A
TITLE: Computer software for processing medical billing record information

Detailed Description Text (5):
At least one other computer-readable storage medium 3 contains the input medical billing information to be processed by the software. This input medical billing information is preferably stored in a pre-existing database on the input medical billing record storage medium 3 in any universally computer-readable format such as American Standard Code for Information Interchange (ASCII) text, EBCIDIC, dBase, FoxPro, Lotus or Microsoft Excel or ACCESS, that can be converted into a form suitable for processing by the software.

Detailed Description Text (9):
Before processing the medical billing record data to determine if a potential violation of the Medicare "72 hour billing rule" has occurred, the computer processor 1 reads all Medicare Remittance Advice (RA) billing record information from a pre-existing database contained on the input medical billing record storage medium 3 for conversion into a format suitable for use by the processing software. After conversion the RA information is imported into the processed medical billing record storage medium 4 for future processing by the software. The actual conversion of the input billing record information into a form suitable for use by the processing software is accomplished by conversion instructions contained in the software of the present invention. The importing function can be performed by a database conversion program such as the "ACCESS" database conversion software manufactured by Microsoft Corporation or a similar database conversion software product, or by a customized database conversion program written specifically for this purpose.

Detailed Description Text (12):
Each input billing record is converted by breaking up the data string representing the billing record into individual segments of predetermined length that each correspond to a specific piece of information about the individual patient for whom the billing record was created, such as the patient's identification, the payment amount received or refunded by the medical service provider, the intermediary insurance or coinsurance provider, and any amounts of coinsurance or deductibles applicable to that individual patient for the service billed. The patient identification code is unique to each individual billed patient and can be the social security number of the individual patient or a Medicare insurance tracking number. The payment amount segment contains a separate hexadecimal coded character in its last byte for determining whether a payment was received by the medical service provider or refunded by the service provider to a receiving party. The hexadecimal coded letters "A" through "I" (which respectively represent the decimal digits 0 through 9) indicate that a payment was received by the medical service provider. The hexadecimal letters "J" through "R" (which again respectively represent the decimal digits 0 through 9) indicate that a payment was refunded by the medical service provider. A neighboring data string segment will indicate the receiving party of the refund. The software is programmed to look for each data string segment by its predetermined length and in the order the segment appears in the data string as it processes each input billing record for storage in the processed medical billing record storage medium 4. The preferred embodiment of the

medical billing record processing software can function in accordance with the flow diagram shown in FIG. (2). A printout of the source code steps corresponding to the flow diagram steps of FIG. (2) is shown in Appendix B. The source code is written in the Visual BASIC programming language.

Detailed Description Text (21):
The medical billing record processing software also contains instructions for updating the exceptions database to indicate refund amounts and whether the refund was made to the payor of coinsurance or the payor of a deductible premium on a coinsurance policy supplementing the Medicare coverage. The processing software can either manually or automatically update the matching billing records to provide refund information. An example of how this update can be performed automatically by the processing software is disclosed in U.S. Pat. No. 5,253,164. These updates can be displayed along with all other information from the applicable exceptions database entry by use of the output display device 5.

Detailed Description Text (24):
As described for the preferred embodiment, the computer processor 1 first imports all Medicare Remittance Advice (RA) billing record data onto the processed medical billing record storage medium 4 from a pre-existing database on the input medical billing record storage medium 3 while converting the RA data into a format suitable for use by the processing software.

Detailed Description Text (31):
As in the preferred embodiment, the alternate embodiment of the medical billing record processing software contains instructions for updating the exceptions database to indicate refund amounts and whether the refund was made to the payor of coinsurance or the payor of a deductible premium on a coinsurance policy supplementing the Medicare coverage. As in the preferred embodiment the processing software can either manually or automatically update the matching billing records to provide the refund information. As described above, an example of how this update could be performed automatically by the processing software is disclosed in U.S. Pat. No. 5,253,164. As in the preferred embodiment, these updates can be displayed along with all other information from the applicable exceptions database entry by use of the output display device 5.

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